

Is More Targeting Consistent with Less Spending?

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Abstract

Economists often advise governments to target their spending better when cuts are called for. This paper asks whether that advice is consistent with a political-economy constraint that limits the welfare losses to the non-poor from spending cuts. A simple theoretical model shows that the answer is unclear on a priori grounds, and so will depend on the specifics of program design and financing. A case study for a World Bank-supported social program in Argentina illustrates how cuts can come with worse targeting performance; the allocation to the poor falls faster than that to the non-poor. Some lessons are drawn for how the poor might be better protected from cuts.

Keywords: Targeting, poverty, political-economy, Argentina

JEL classifications: H53, I38

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1. Introduction

The impact on the poor of cuts in public spending has been of widespread concern. It is often recommended that cuts should be combined with better targeting, so the poor do not suffer. If there is a broad political constituency in support of protecting the poor from cuts then the task should not be too difficult. But is it possible to target more, while spending less, when the political support of the non-poor is crucial, and cannot be counted on?

It is common to find benefit “leakage” to the non-poor from programs ostensibly targeted to the poor. This suggests scope for finer targeting. However, a degree of leakage may well be crucial to the political sustainability of social programs (Gelbach and Pritchett, 1997; de Donder and Hindriks, 1998). By the same token, the feasibility of combining cuts with better targeting is unclear on a priori grounds given that the non-poor may also have the power to protect themselves from the welfare burden of spending cuts. While there have certainly been cases in which cuts were combined with better targeting, possibly these were all situations in which the political economy constraint was not binding.

Nor does the (limited) evidence available support a presumption that targeting tends to worsen with program expansion, or improve with cuts. For example, comparisons of the regional differences in participation rates in various social programs in India suggest that it is the non-poor who capture the early benefits, with larger marginal gains to the poor only emerging later on (Lanjouw and Ravallion, 1999). The benefit-incidence studies I know of that have tracked changes in incidence over time have found improvements in targeting with program expansion (Hammer et al., 1995; van de Walle, 1995).

To investigate this issue, the paper begins with a simple model of the political-economy of spending cuts (section 2). The model identifies conditions under which the poor will lose from

cuts that are constrained to have limited welfare impacts on the non-poor. After describing how targeting performance is to be measured (section 3), the paper presents evidence on how cuts to a social program in Argentina affected its performance in targeting the poor (section 4). The concluding section summarizes the results, and discusses possible implications for efforts to protect the poor from public spending retrenchment.

2. Targeting and Spending Cuts

The model is as follows. There is initially some allocation of program spending between given numbers of “poor” and “non-poor” people. Spending on each poor person is G^p and it is G^n for the non-poor. Aggregate program spending per capita is:

$$G = G^p H + G^n (1 - H) \quad (1)$$

where H is the proportion of the population that is poor. The allocation G^n, G^p yields a benefit to each non-poor household of $B(G^n, G^p)$. The B function is smoothly increasing in both arguments with first derivatives B_n , which I call the “direct marginal benefit”, and B_p , the “indirect marginal benefit”; the latter allows for interdependence, in that the non-poor can gain (indirectly) from spending on the poor. The cost of the program to each non-poor person is $C(G)$. (This includes the taxes or fees for financing the program plus efficiency losses from raising the revenue.) The function C is assumed to be smoothly increasing. So the net gain to the non-poor from the program is $B(G^n, G^p) - C(G)$. However, G^p is assumed to be an adequate measure of the gain to the poor. The allocation is assumed to be efficient in that any re-allocation of the budget would hurt one of the two groups. For this to be the case, a reallocation from each poor person to each non-poor person — holding total spending constant — must benefit the non-poor on balance. This implies that $B_n H > B_p (1 - H)$.

Total spending is now to be cut, and the non-poor have the power to block any proposal that makes them worse off. So $B(G', G'') - C(G)$ is to be held constant. This constraint, and equation (1), then determine how the aggregate budget cut is distributed between the poor and non-poor. Let $G''(G)$ and $G'(G)$ be the allocations from the total outlay, G , consistent with the political-economy constraint.

The targeting performance of the program is measured by the absolute difference in the benefits going to the poor versus the non-poor. Let this difference be

$$T(G) \equiv G''(G) - G'(G) \quad (2)$$

which I will call the “targeting differential”; the benchmark of a uniform allocation (with equal outlays per capita to the two groups) is deemed to be “untargeted”.

Under the political economy constraint, the effect of a change in total spending on the targeting differential is given by:

$$T_G = \frac{B_n + B_p - C_G}{B_n H - B_p (1 - H)} \quad (3)$$

This has the sign of $B_n + B_p - C_G$, given that the allocation is efficient. If the marginal cost to the non-poor is zero then targeting will deteriorate with cuts, and improve with higher outlays. This is intuitive; a low marginal cost will mean that the cuts do not entail much saving to the non-poor, who will then require a larger slice of the program benefits to compensate.

The above analysis relies heavily on a binding political-economy constraint preventing the cuts from reducing the welfare of the non-poor. Alternatively, one can consider the allocation that maximizes $B(G', G'') + \epsilon G''$ (for some $\epsilon > 0$) at given G , and ask how this allocation varies with G . Assuming that $B(G', G'')$ is strictly quasi-concave, there will be interior solutions for G'' and G' as functions of G . However, the effect on the targeting

differential is also ambiguous in this case. For example, if $B = G^r + h(G^p)$ (for some strictly increasing concave function h) then the poor are fully protected from cuts ($G_G^p = 0$) and $T_G = -1/(1 - H) < 0$; by contrast, if $B = h(G^r) + G^p$ then the allocation to the non-poor is fully protected ($G_G^r = 0$) and so $T_G = 1/H > 0$.

The main task of the empirical work will be to estimate the effect of changes in total spending on a measure of targeting performance motivated by the above discussion.

3. Measuring Targeting Performance

To identify the effects of program cuts on targeting performance we need a consistent measure of performance observed over various levels of program spending, with suitable controls for other incidental factors influencing performance. I will focus on a central government anti-poverty program for which the job of making spending allocations is decentralized to provincial governments. Each provincial government allocates its budget across the local government areas (“departments”) within its boundaries.

The measure of targeting performance I will use is the province-specific regression coefficient of the inter-departmental budget allocation on a (pre-determined) measure of poverty by department.² This regression coefficient can be interpreted as an estimate of the targeting differential defined in the last section. That interpretation rests on an assumption about the behavior of provincial governments. It is assumed that a province’s preferred allocation to a household depends on that household’s level of poverty, but that it does not depend on the level of poverty in the household’s department of residence independently of that. (The household’s own poverty may nonetheless depend on where it lives.) The actual amount received by a

household can deviate from the province's optimal allocation; but the deviation is independent of the level of poverty in the area of residence. This assumption assures that there is horizontal equity in expectation within a given province, in that a person living in a poor department expects to get the same amount from the program as an equally poor person living in a rich area within the same province.³

To see the implications of this assumption for measuring targeting performance, consider again the model of section 2, which is now interpreted as applying to each of the provincial governments. The central government allocates a total budget of G per head of across the M provinces such that G_j is received by province $j (=1, \dots, M)$. Then each province decides how much of its budget should go to the poor versus the non-poor. The chosen allocation by province j is G_j^n per capita for the non-poor and G_j^p for the poor. Province j comprises M_j departments.

The per capita allocations to department $i (=1, \dots, M_j)$ within province j can be written as:

$$G_{ij}^n = G_j^n + \varepsilon_{ij}^n \quad (4)$$

$$G_{ij}^p = G_j^p + \varepsilon_{ij}^p \quad (5)$$

where the ε 's are the departmental deviations from the province means.

Total disbursements to the poor and non-poor must exhaust the budget. This creates an accounting identity linking total program expenditure per capita to the poverty rate in a department. Let G_{ij} denote total spending in the i 'th department of the j 'th province, and let the corresponding poverty rate be H_{ij} for which the province mean is H_j . Then:

$$G_{ij} = H_{ij} G_{ij}^p + (1 - H_{ij}) G_{ij}^n \quad (6)$$

² The method follows Ravallion (1999) which also goes into further detail on the properties of the estimated targeting differential.

³ There may, however, be horizontal inequity between provinces; Ravallion (1999a) discusses this point further and provides evidence for the Argentinean program discussed below.

Using equations (4) and (5), we can re-write (6) in the form of a simple linear regression:

$$G_{ij} - G_j = T_j(H_{ij} - H_j) + v_{ij} \quad (7)$$

where

$$v_{ij} = \varepsilon_{ij}'' + (\varepsilon_j^p - \varepsilon_{ij}'')H_{ij} \quad (8)$$

and $T_j \dots G_j^p - G_j''$ is the targeting differential for province j . Under the assumption of intra-provincial horizontal equity, v_{ij} will have zero mean for a given province and be uncorrelated with H_{ij} (since the ε 's are zero-mean errors within any given province and are uncorrelated with both H_{ij} and its squared value).⁴ Thus H_{ij} is exogenous in (7) and so one can estimate T_j from an OLS regression of G_{ij} on H_{ij} across all departments within a given province.⁵ This will then be measured before and after cuts to the program, which differ across provinces.

4. Tests of the Effects of Cuts on Targeting

Argentina's Trabajar program was introduced in response to a sharp increase in unemployment in 1996-97. The program provides short-term work at relatively low wages on community-level projects.⁶ (Examples of funded sub-projects include pre-schools, health-posts, drainage and sanitation infrastructure, water tanks, local roads and public parks.)

The central government allocates its budget across provinces, based in large part on the expected incidence of unemployment amongst the poor (based on an urban labor force survey; differences in the poverty rate in rural areas were also considered). The center's disbursements

⁴ Note that the horizontal equity assumption rules out effects of the program on migration within provinces. If there is no difference in expected allocations for otherwise identical households then they will have no incentive to move.

⁵ Equation (8) indicates that the error term will not be homoskedastic although this can be dealt with in estimating the standard error of the targeting differential. All t-ratios quoted below are based on standard errors corrected for heteroscedasticity.

can only be made against outlays on wages, paid up to an agreed maximum equal to the minimum wage rate. The provincial or municipal government (or, in about 15% of sub-projects, a bona fide non-governmental organization) must secure financing for the rest.

The sub-projects must be technically viable. Amongst those proposals that are deemed viable, priority is given to those that are likely to be of value to poor communities, as indicated by their location, the type of project, its labor-intensity, the desire to undercut the maximum wage rate, and prior success of the local sponsoring agency in completing any past projects. This prioritization is implemented through an ex-ante appraisal that assigns points to each technically viable project proposal, and proposals with highest points are funded first within each province.

Within the constraints set by the center's rules (summarized above), the provincial project offices have considerable influence over how the money is allocated within the province. Local communities within a province can differ greatly in their ability to propose and co-finance viable sub-projects. Better off areas undoubtedly have a comparative advantage in this respect, both in assuring that the project proposal is technically viable and financing the non-wage costs. Interviews with numerous provincial staff (in five provinces during 1997-98) suggested that the efforts of provincial managers to get good projects from poor areas within their province are likely to be crucial in determining overall targeting performance. Active involvement of the provincial office can help greatly in generating project proposals from poor areas, and assuring that they are technically viable. It can then help in securing funding for the non-wage costs from other (national and provincial) government programs. It is clear that in some provinces the local managers are professional technocrats who aim to implement the program's objectives in an

⁶ Hereafter, when I refer to "Trabajar", I mean the program called Trabajar II in Argentina. For further discussion of the differences between Trabajar I and II see Ravallion (1999).

efficient way. In other provinces, however, they are more heavily swayed by national or local politics in deciding which areas should get most attention from the program.

Disbursements began in May 1997. There appears to have been a large pent-up demand for work on the program, due to the high level of unemployment at the time. The coming elections (in October 1997) also encouraged high program spending in the first five months. The center imposed a sharp contraction in program spending after this initial period. Average program spending was \$6.37 per capita between May and September 1997 (inclusive); this fell to \$2.58 per capita in the following five months (October 1997 to February 1998). Spending then rebounded slightly to \$3.05 per capita in the final five months (March 1998 to July 1998).

The cuts were not uniform across provinces. There were unexpected differences in the extent of the local unemployment problem (expected differences were reflected in the center's initial budget allocation across provinces). There were also differences between provinces in the extent to which the program was needed to help win votes in the months leading up the October 1997 elections. These factors meant that the cuts varied greatly across provinces; the percentage fall in spending per capita between the first five months and the second five months ranged from 25% to 62%. The rest of this section will examine what happened to the program's targeting performance after these cuts.

Following the approach outlined in section 3, the spatial variances at the level below the province can be exploited to identify a measure of targeting performance appropriate to this program. I will use data for 503 departments across 22 provinces. A poverty measure is available at department level, namely the percentage of households deemed to have one or more "unmet basic needs" (*UBN*) based on the 1991 census; the list of "basic needs" include adequate

housing, sanitation, and education.⁷ Since it is based on the census, the *UBN* index covers the whole population, and so is representative at a high level of geographic dissaggregation. The index is the only systematic poverty data at department level available to provincial offices in setting priorities for Trabajar sub-projects. The index is somewhat out of date (5-6 years prior to the Trabajar program), although this means that it can be safely treated as exogenous. The composition and weighting of the component indicators is not beyond question. Nonetheless, the *UBN* index is the best information available for the present purpose. The average *UBN* index across the 22 provinces is 22.5%.

To estimate the targeting differential for each province I regress Trabajar spending per capita on the *UBN* index across departments, as in equation (7). To test the effect of budget contraction on targeting performance, I divide the whole period of the program's operation into three intervals of five months. The first period (May-September 1997) saw quite good targeting in many of the provinces, but the gains dissipated in the second period. The overall targeting differential (across all 503 departments) was \$72 per person ($t=8.54$) in the first five month period, falling to \$15 ($t=10.57$) in the second period, and recovering slightly in the third period to a value of \$23 ($t=10.31$). (Recall that the targeting differentials are interpreted as the difference between the per capita disbursement going to the poor versus non-poor.) A statistical addendum is available with detailed results on spending and the targeting differentials by province and period.

To identify the effect of spending cuts on targeting performance, we can now estimate an empirical model of the $\pi(G)$ function defined in section 2. To do this I regress the province and

⁷ A household is deemed to have unsatisfied basic needs if there are more than three people per room, or the housing is sub-standard (unsafe, for example), or it does not have a toilet or bathroom, or if there is any school-age child not attending school, or more than four people are working and the household head has little or no education.

period-specific targeting differentials on program spending per capita across provinces, pooling all three periods and all provinces. The targeting differential will, however, vary across provinces according to other factors. Examples include the strength of provincial concern for poverty reduction, how poor the province is as a whole, its aggregate budget allocation (over all three periods), the history of the provincial efforts at targeting the poor, and the capabilities of local managers. It is not implausible that some or all of these variables will also be correlated with program spending. So their omission will yield a biased estimate of the effect of cuts on targeting performance. However, these differences in provincial targeting performance can reasonably be treated as provincial fixed effects when estimating the impact of changes in program spending.

Combining these observations, the empirical model of the $\mathcal{T}(G)$ function takes the form:

$$T_{jt} = \alpha + \beta G_{jt} + \gamma_j + \epsilon_{jt} \quad (j=1,\dots,22; t=1,2,3) \quad (9)$$

where γ_j is the province-specific effect and ϵ_{jt} is an innovation error. (I also tested for non-linearity in this relationship by adding a squared term in program spending per capita but this was insignificant.)

The estimate of β in equation (9) was 3.55 (with a t-ratio of 5.32); a \$1 cut in average spending reduced the targeting differential by \$3.55 on average. The estimated province effects (the γ_j 's) were jointly significant at the 5% level, and individually significant in about half the provinces. (The statistical addendum gives full details by province.)

There are clearly strong inter-provincial differences in targeting performance not accountable to differences in budget allocations from the center. And these province effects are correlated with program spending. Dropping the province effects from equation (9), the estimate

of ω falls to 2.23 ($t=2.17$) indicating a tendency for lower program spending in provinces with better targeting performance (conditional on program spending).

One factor in this negative correlation between program spending and targeting performance at a given level of spending is how poor the province is. Across provinces, there is a strong positive correlation between the *UBN* index and average program spending (a correlation coefficient of 0.76). There is only a mild negative correlation between the province fixed effects in equation (9) and the *UBN* index (-0.28). However, a significant partial correlation emerges if one controls for an indicator of the province's latent preference for poverty reduction, namely the targeting differential under a workfare program that preceded Trabajar (Ravallion, 1999a).⁸

So poorer provinces tend to be less effective in reaching their poor at any given budget allocation from the center; but at the same time they tend to attract higher allocations from the center. Elsewhere I have offered a theoretical model that can explain this finding, and discussed its potential implications for central disbursements (Ravallion, 1999b).

Figure 1 plots the targeting differential against spending per capita; to control for the province effects, I have used the estimate of equation (9) to predict the targeting differential for a reference province chosen to be one with a targeting differential close to the overall mean.

So the cuts to this program came with worse, not better, targeting performance. The expected program allocations to the poor fell by more than did those to the non-poor. My casual discussions with provincial project managers suggested that it was politically difficult to assure that the cuts came only from non-poor areas. This reflected (in part) the fact that the program

⁸ On regressing the province fixed effect (from the estimate of equation (9)) on the *UBN* index and the targeting differential for the Trabajar I program, one obtains a regression coefficient of -0.019 ($t=2.46$) on the *UBN* index and 0.459 ($t=3.64$) on the Trabajar I targeting differential. The R^2 is 0.459.

was already favoring poor areas, and so there was little slack for cutting heavily elsewhere while still leaving sufficiently broad participation.

Drawing on the model in section 2, there was little obvious saving, via project financing, to non-poor areas from the cuts. The program had negligible cost-recovery from non-poor areas, even for sub-projects in those areas. Low cost-recovery (at the margin) of program benefits in non-poor areas left the poor more exposed to cuts. Also it is not implausible that marginal benefits to the non-poor were quite high; the initially high degree of targeting implied low allocations to non-poor areas and so probably high marginal benefits. The fact that the program provided work to poor neighbors in non-poor areas presumably also entailed indirect benefits to the non-poor. Unless the sub-projects in non-poor areas were protected from cuts, there would have had to be a welfare loss to the non-poor.

5. Conclusions

To the extent that the poor are the intended beneficiaries, benefits to the non-poor from a social program are commonly seen as “leakage” from “mis-targeting”. It is widely recognized that such leakage may sometimes be essential for the political sustainability of a program. The same circumstances that require leakage to the non-poor for sustainability will presumably act to restrict the welfare losses to the non-poor from cuts. Does this throw serious doubt on the internal consistency of policy recommendations for combining cuts with better targeting?

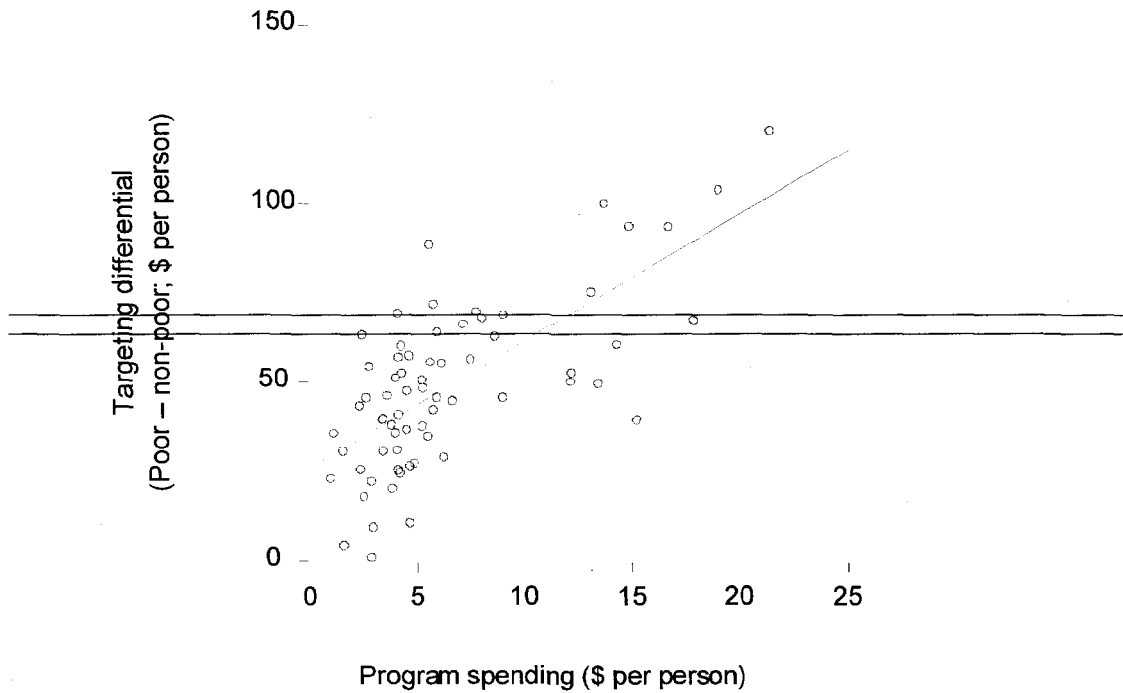
Under certain conditions, the poor can be protected from cuts to a social program even when a political-economy constraint entails that there can be no welfare loss to the non-poor. It will be easier to protect the poor from cuts when the programs concerned entail low marginal benefits and/or high marginal costs to the non-poor. For example, if the method of financing imposes a sufficiently high marginal cost on the non-poor of program expansion then targeting

will improve with cuts. The savings to the non-poor on the financing side will mean that they are more willing to accept a reallocation of outlays in favor of the poor.

These conditions clearly did not hold in the case of the social program in Argentina studied in this paper. I have compared targeting performance across provinces before and after province-specific cuts. The results indicate that the program's performance in reaching the poor deteriorated sharply with cuts to the program's aggregate budget.

Whether these conditions hold for other programs is an open question. The answer will depend on the institutional setting and program design, as these features will determine the marginal costs and benefits to the non-poor from cuts. These contingencies would appear to create some scope for reforms to program design and financing that can help protect the poor from future cuts. However, one must be careful that such reforms do not unduly jeopardize other program objectives. For example, one could lower marginal benefits from leakage to the non-poor at the expense of infra-marginal targeting. That route would of course have ambiguous impacts on the poor; they would be better protected from cuts, but their initial share of program benefits would be lower.

Figure 1: Targeting Performance and Program Spending



Note: Pooled provinces and time periods for Argentina's Trabajar Program, 1997-98, with controls for latent province heterogeneity (reference is Mendoza)

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ADDENDUM

Table 1: Targeting Performance and Program Spending

Province	Targeting differential (/100)			Spending per capita		
	5/1997- 9/1997	10/1997- 2/1998	3/1998- 7/1998	5/1997- 9/1997	10/1997- 2/1998	3/1998- 7/1998
Buenos Aires	-0.028	-0.154*	-0.078	1.09	0.92	1.51
Catamarca	0.339	0.116	0.307	14.24	3.76	4.06
Chaco	0.193	0.027	0.182	17.79	5.16	7.09
Chubut	0.331	0.454	0.182	5.67	2.69	4.83
Cordoba	1.435*	0.969*	1.593*	4.44	2.82	2.38
Corrientes	0.676*	-0.003	0.048	14.81	2.30	3.38
Entre Rios	0.312	-0.006	0.260	7.43	4.13	3.92
Formosa	0.079	0.185*	0.067	13.36	4.19	5.22
Jujuy	0.932*	0.271	0.342	18.96	5.20	6.58
La Pampa	0.278*	0.175*	-0.060	8.54	4.20	6.20
La Rioja	-0.075	-0.013	0.224	15.13	2.55	4.00
Mendoza	0.640*	0.044	0.435*	5.89	1.56	2.23
Misiones	-0.142	-0.088	-0.085	12.05	6.07	5.56
Neuquen	-0.043	-0.114	0.126	12.11	5.83	7.68
Rio Negro	0.601*	0.251	1.032*	8.90	4.58	5.51
Salta	0.944*	0.395*	0.766*	13.07	3.78	4.55
San Juan	0.920*	0.631*	0.457*	8.92	3.35	2.79
San Luis	0.785	0.031	0.312*	16.66	2.47	3.53
Santa Cruz	0.393	-0.233	0.083	5.69	2.87	4.05
Santa Fe	0.567*	0.257*	0.199*	7.95	4.46	4.01
Santiago Del Estero	0.883*	-0.066	0.038	21.38	4.07	3.96
Tucuman	1.122*	0.386*	0.471*	13.65	4.58	5.46
All departments	0.716*	0.153*	0.229*	6.37	2.58	3.05

Note: The targeting differentials are given by the regression coefficient of program spending per capita on the poverty rate, across all departments in each province; * indicates that the coefficient is significantly different from zero at the 5% level based on White heteroskedasticity-consistent standard errors.

Table 2: Testing the Effects of Program Cuts on Targeting Performance

Variable	Coefficient	t-statistic	Prob.
Program spending	0.0355	5.3163	0.000
<i>Province fixed effects</i>			
Buenos Aires	-0.1284	-3.5702	0.001
Catamarca	-0.0073	-0.0692	0.945
Chaco	-0.2218	-1.8392	0.073
Chubut	0.1661	1.5324	0.133
Cordoba	1.2181	6.3683	0.000
Corrientes	-0.0024	-0.0281	0.977
Entre Rios	0.0053	0.0585	0.954
Formosa	-0.1594	-1.2032	0.236
Jujuy	0.1509	1.8067	0.078
La Pampa	-0.0933	-0.8864	0.380
La Rioja	-0.2115	-1.0575	0.296
Mendoza	0.2583	1.8397	0.073
Misiones	-0.3855	-3.7157	0.001
Neuquen	-0.3138	-2.8867	0.006
Rio Negro	0.4031	1.7214	0.092
Salta	0.4482	3.8180	0.000
San Juan	0.4909	6.1743	0.000
San Luis	0.1076	1.0678	0.292
Santa Cruz	-0.0684	-0.4381	0.664
Santa Fe	0.1465	1.8623	0.069
Santiago Del Estero	-0.0634	-0.5862	0.561
Tucuman	0.3791	2.8276	0.007
R-squared	0.8129		
S.E. of regression	0.2094		
Mean dependent variable	0.3266		
Log likelihood	23.6800		
F-statistic	8.4932		

Note: Dependent variable is the targeting differential (/100). White heteroskedasticity-consistent standard errors.